

### ***Amendments to the Claims***

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (currently amended) A computer-implemented method for providing a recommendation list from a plurality of items, comprising ~~the steps of:~~

receiving an adaptable constraint to apply during searches performed in response to recommendation requests, wherein the adaptable constraint includes a plurality of free variables;

receiving a recommendation request including a plurality of values defined by a user, wherein the plurality of values includes at least one value for each of the plurality of free variables in the adaptable constraint;

binding the received values to the corresponding free variables to update the adaptable constraint;

~~performing a search of~~ searching the plurality of items in response to the received recommendation request, wherein a set of search parameters is defined by the updated adaptable constraint, and wherein ~~performing~~ the searching includes:

determining an order for applying a recommendation filter and a constraint filter using a cost calculation based on a probability that a randomly selected item of the plurality of items will pass the second applied filter of the recommendation filter and the constraint filter;

selecting an item from the plurality of items and, in the determined order,

applying the constraint filter, comprising selecting the ones of the plurality of items that determining if the item satisfies[[y]] the updated adaptable constraint for the recommendation request, and

applying the recommendation filter, comprising computing a predicted value based on [[a]] the recommendation filter and determining if the predicted value exceeds a predetermined number, for each of the selected ones of the items

wherein if the item does not pass the first applied filter, the item is discarded; and

appending the selected ones of the item[[s]] meeting predetermined criteria to generate the recommendation list if the item passes both filters; and

transmitting the generated recommendation list for presentation on a device.

2. (canceled)

3. (currently amended) The method of claim 1, wherein said selecting and appending are repeated until appending selected ones of the items further includes appending the recommendation list includes a predetermined number of items to the list.

4-5. (canceled).

6. (currently amended) The method of claim 1, wherein ~~selecting the ones of the items that satisfy~~ applying the constraint filter further includes applying a constraint including a Boolean expression.

7. (currently amended) The method of claim 1, wherein ~~selecting the ones of the items that satisfy~~ applying the constraint filter further includes applying a constraint to ~~the ones of the items, wherein the constraint including~~ing an equality expression.

8. (currently amended) The method of claim 1, wherein ~~selecting the ones of the items that satisfy~~ applying the constraint filter further includes applying a constraint to ~~the ones of the items, wherein the constraint including~~ing a category membership expression.

9. (currently amended) The method of claim 1, wherein computing the predicted value further includes evaluating the ~~selected ones of the item~~[[s]] with collaborative filtering.

10-11. (canceled)

12. (currently amended) The method of claim 1, wherein ~~specifying~~ receiving the adaptable constraint ~~filter~~ further includes:

obtaining a constraint; and  
storing the constraint in memory.

13-15. (canceled)

16. (currently amended) An apparatus for providing a recommendation list from a plurality of items in a data processing system, comprising:

a processing component configured to process instructions for selecting items from the plurality of items, wherein the processing component includes:

a constraint filter including at least one constraint having a plurality of free variables, wherein a value for each free variable is defined by ~~a the~~ user;

a recommendation filter; and

an order determination module configured to determine an order for ~~invoking applying~~ the constraint filter and the recommendation filter using a cost calculation based on a probability that a randomly selected item will pass the second applied filter of the constraint filter and the recommendation filter;

an input component configured to receive a recommendation request including a value defined by the user for each of the free variables in the constraint;

a recommender component configured to perform a search in response to a received recommendation request, wherein a set of search parameters is defined by the constraint, and to generate a recommendation list based on the constraint filter and the recommendation filter; and

an output component configured to transmit the generated list for presentation on a device.

17. (currently amended) The apparatus of claim 16, wherein the processing component further includes a prediction module configured to compute the means for computing predicted values based on the recommendation filter.

18. (currently amended) The apparatus of claim 16, wherein the order determination module is further configured to determine ~~the~~ a lowest cost order ~~of the filters to apply to the plurality of the items based on the cost of the filters~~; and

~~\_\_\_\_\_ wherein the processing component is configured to apply the constraint filter first when it is determined that the cost of the constraint filter is lower than the cost of the recommendation filter, and to apply the recommendation filter first when it is determined that the cost of the recommendation filter is lower than the cost of the constraint filter.~~

19-20. (canceled)

21. (currently amended) The apparatus of claim 16, wherein the at least one constraint includes a ~~[[b]]~~ Boolean expression.

22. (previously presented) The apparatus of claim 16, wherein the at least one constraint includes a category membership expression.

23. (previously presented) The apparatus of claim 16, wherein the at least one constraint includes an equality expression.

24. (previously presented) The apparatus of claim 16, wherein the recommendation filter includes a collaborative filtering module that computes predicted values by evaluating ones of the plurality of items.

25. (currently amended) The apparatus of claim 16, wherein the recommender component is further configured to search until the recommendation list includes a predetermined number of items ~~truncate the recommendation list when a predetermined number of the ones of the items on the recommendation list has been met.~~

26. (previously presented) The apparatus of claim 16, further comprising an input component configured to:

obtain a constraint; and  
store the constraint in a memory.

27. (canceled)

28. (previously presented) The apparatus of claim 16, wherein the processing component is further configured to adaptively specify the constraint filter, using a set of constraint-forming rules.

29. (currently amended) A computer-implemented method of generating recommendation lists from a plurality of items having assigned category memberships representing attributes of the items, comprising:

receiving a plurality of recommendation requests;  
applying, during a search of the plurality of items performed for each recommendation request, a series of filters to each of the items, the series comprising a constraint filter and a recommendation filter for furnishing a predicted rating value, wherein the recommendation filter and the constraint filter are applied in an order determined using a cost calculation based on the probability that a randomly selected item will pass the second applied filter of the recommendation filter and the constraint filter, wherein the constraint filter is selected based on attributes associated with the recommendation request, wherein the constraint filter applies a constraint to the parameters of the search, the constraint having a plurality of free variables each free variable in the plurality of free variables has a value defined by the user;

generating, for each recommendation request, a recommendation list based on the predicted rating value for the item that passes the constraint filter and the recommendation filter; and

for each recommendation request, transmitting the generated list to a user for presentation on a device.

30. (currently amended) The method of claim 29, further comprising:  
building a constraint using constraint forming rules; and  
incorporating the constraint into the constraint filter.

31. (canceled)

32. (currently amended) The method of claim 29, [[31]] wherein the recommendation filter and the constraint filter are applied in order determining step comprises:

~~—————determining a cost for a first order, the first order being applying the constraint filter before applying the recommendation filter;~~

~~—————determining a cost for a second order, the second order being applying the recommendation filter before applying the constraint filter; and~~

~~—————establishing one of the first and second orders as the a lowest cost order based on the respective costs thereof.~~

33. (currently amended) The method of claim 29, wherein generating the recommendation list ~~generating step~~ comprises generating a list of recommendations

based on predicted rating values of the items that pass the constraint filter and the recommendation filter being in excess of a specified rating value.

34. (currently amended) The method of claim 29, wherein generating the recommendation list ~~generating step~~ comprises generating a list of recommendations based on a specified number of the items that pass the constraint filter and the recommendation filter with highest predicted rating values.

35. (canceled)

36. (currently amended) A method of generating a recommendation list from a plurality of items having assigned category memberships representing attributes of the items, comprising:

building a constraint using constraint forming rules, wherein the constraint includes a plurality of free variables;

receiving a recommendation request including a plurality of values defined by a user, wherein the plurality of values includes at least one value for each of the plurality of free variables in the constraint;

binding the received values to the corresponding free variables to update the constraint;

incorporating the constraint into a constraint filter;

determining a cost for a first order based on a probability that a randomly selected item will pass the recommendation filter, the first order being applying the constraint filter before applying the recommendation filter;



determining a cost for a second order based on a probability that a randomly selected item will pass the constraint filter, the second order being applying the recommendation filter before applying the constraint filter;

establishing one of the first and second orders as the lowest cost order based on the respective costs thereof;

applying a series of filters to each of the plurality of items during a search performed in response to the recommendation request, the series comprising the recommendation filter and the updated constraint filter in the lowest cost order, wherein a set of parameters for the search is defined by the constraint;

generating a list of recommendations based on the predicted rating values for the items that pass the constraint filter and the recommendation filter; and

transmitting the generated list to the user for presentation on a device.

37-38. (canceled)

39. (previously presented) The computer-implemented method of claim 1, wherein a free variable in the plurality of free variables for the adaptable constraint includes a set of possible values to be selected by the user.

40. (previously presented) The computer-implemented method of claim 1, further comprising:

building a constraint to apply to recommendation requests using constraint forming rules, wherein the constraint includes a plurality of free variables.

41. (previously presented) The method of claim 36, wherein a free variable in the plurality of free variables for the adaptable constraint includes a set of possible values to be selected by the user.

42. (currently amended) A computer program product comprising a tangible computer useable medium including control logic stored therein, the control logic enabling the generation of a recommendation list, by a method comprising:

receiving an adaptable constraint to apply during searches performed in response to recommendation requests, wherein the adaptable constraint includes a plurality of free variables;

receiving a recommendation request including a plurality of values defined by a user, wherein the plurality of values includes at least one value for each of the plurality of free variables in the adaptable constraint;

binding the received values to the corresponding free variables to update the adaptable constraint; and

searching ~~the~~ a plurality of items in response to the received recommendation request, wherein a set of search parameters is defined by the updated adaptable constraint, comprising:

determining an order of applying a recommendation filter and a constraint filter using a cost calculation based on a probability that a randomly selected item will pass a second applied filter of the recommendation filter and the constraint filter;

selecting an item from the plurality of items,

applying a first filter of the recommendation filter and the constraint filter according to the determined order,  
if the item does not pass the first applied filter, discarding the item,  
if the item passes the first applied filter, applying the second filter of the recommendation filter and the constraint filter according to the determined order, and  
if the item passes both the first and second filters, appending the item to the recommendation list.

43. (canceled).

44. (new) The computer program product of claim 42, wherein the cost calculation is determined according to the equation:

cost = (number of results required / probability that a randomly selected item will pass the second applied filter) \* (cost of applying the first filter to generate a single item + cost of applying the second filter to the single item).

45. (new) The computer-implemented method of claim 1, wherein the cost calculation is determined according to the equation:

cost = (number of results required / probability that a randomly selected item will pass the second applied filter) \* (cost of applying the first filter to generate a single item + cost of applying the second filter to the single item).

46. (new) The apparatus of claim 16, wherein the cost calculation is determined according to the equation:

$$\text{cost} = (\text{number of results required} / \text{probability that a randomly selected item will pass the second applied filter}) * (\text{cost of applying the first filter to generate a single item} + \text{cost of applying the second filter to the single item}).$$

47. (new) The computer-implemented method of claim 29, wherein the cost calculation is determined according to the equation:

$$\text{cost} = (\text{number of results required} / \text{probability that a randomly selected item will pass the second applied filter}) * (\text{cost of applying the first filter to generate a single item} + \text{cost of applying the second filter to the single item}).$$

48. (new) The method of claim 36, wherein the cost calculation is determined according to the equation:

$$\text{cost} = (\text{number of results required} / \text{probability that a randomly selected item will pass the second applied filter}) * (\text{cost of applying the first filter to generate a single item} + \text{cost of applying the second filter to the single item}).$$

49. (new) A method for providing a recommendation list, comprising:  
receiving a recommendation request including a value corresponding to a free variable of a constraint; and

generating a recommendation list of at least one item of a plurality of items in response to the recommendation request, comprising:

determining an order for applying a constraint filter, including the constraint, and a recommendation filter, based on a probability that a randomly selected item of the plurality of items will pass a second applied filter of the recommendation filter and the constraint filter;

selecting an item from the plurality of items;

applying a first filter of the recommendation filter and the constraint filter according to the determined order;

applying a second filter of the recommendation filter and the constraint filter according to the determined order if the item passes the first filter;

appending the item to the recommendation list if the item passes both the first filter and the second filter.